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The First Half Year of an Infant's Life.

A THESIS

PRESENTED BY

Supt. Thomas Scott Lowden, A. M., Ph. D.,

Greenville, Pa.

1906

For the Degree of Doctor of Philosophy, in Education, in the Post-graduate Department
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THE FIRST HALF-YEAR OF AN INFANT'S LIFE.

SUPT. THOMAS SCOTT LOWDEN, A. M., PH., D., Greenville, Pa.

A Graduating Thesis; Courses N and A, Pedagogy and Philosophy.

Much having been recently written on infant and child psychology, it may be thought that the writer is threshing old straw. But in these fields of investigation, especially in the former, there is much unthreshed grain. The resources in these departments of study are rich and inexhaustible. When the development of the child is better known, much of the old psychology and metaphysics will be discarded to give place to what will appear more advantageous in the light of reason, through careful observation, varied experimentation and critical analysis of the rise and development of consciousness.

That is the most reliable and useful psychology which is genetic. But the genetic psychology is now only in its infancy. It will take years of philosophical study, volumes of statistics from observations and experiments on infants and children to formulate the new psychology. The most intelligent teachers and parents must be called to assist the philosopher.

It cannot be doubted that much in adult life can best be studied through child life; that when the dim domains of adult consciousness have been explored in the light and by the light of psychic development in the race and in the individual, much now in our mental natures, not understood,

misunderstood, or appearing vague will be clarified. No longer will time need to be consumed in discussing such questions as, "Are ideas innate?" "Do ideas arise from sense?", which are easily disposed of by the new psychology. Hereafter the time of the Descartes and Lockes will be spent in work more beneficial to humanity.

The ultimate goal of the new psychology is not isolated mental facts and statistics. Its problem is one of law,—laws of development. As the laws in physical science have been discovered through induction, so the laws of intellectual development must be sought in mental facts. Series upon series of facts obtained through observation and experimentation alone can assist the reason in discerning laws. What are now needed by the genetic psychologist are facts from child life, gathered from all peoples in different stages of intellectual and moral progress and varied conditions of life.

The facts reported by any one observer are not necessarily conclusive in establishing a psychic law. Whatever he gleans, if his observations have been unprejudiced, systematic and scientific, and recorded accurately, will aid the new psychology, but his reports cannot be taken as sufficiently comprehensive to constitute an established law. The development of the individual mentally, morally and physically depends largely upon conditions and circumstances. Blood *does* tell. It *does* flow in long channels from distant sources gathering the pure and the impure into its current, eliminating and imbibing elements of strength and weakness. The mental, moral, physical natures and temperaments of ancestry, especially of the immediate parents, the parental frame of body and mind at conception, the mother's bodily and mental condition in the foetal period of her offspring, the kind and amount of nourishment the child receives during the intra-uterine and extra-uterine life, the family conditions and natural environments,—all are factors that enter into the child's very nature and largely determine his development. Hence no two children can be exactly alike in bodily appearance, in intellect and temperament even in the same family.

It is often wondered why two children of the same sex and parentage are so unlike. If the above factors could be clearly discerned and if parents would make these factors a

study, the mystery in-part would be self-explanatory. No more can two human beings be alike in temperament, mental, moral and physical characteristics than could the Iliad have been formed by haphazardly throwing together the letters of the Greek alphabet. However intelligent minds can write an Iliad, it can not be Homer's. So, too, parents in a limited way can determine what their offspring shall be. They can live pure, wholesome, intellectual lives, attending carefully to physical needs, mold the growing natures of their children by being parents in the highest sense of the word, studying childhood and familiarizing themselves with the laws of human development.

There is a feeling abroad that parents can not give an uncolored account of the development of their children. It is true, they are liable to be biased, though often unconsciously so, in the statements of their children's progress. But if the reports by intelligent parents of observations on their children are not to be regarded as trustworthy, who, then, are competent and have the requisite opportunities to make proper investigations in child life? Few physicians are prepared to do so, and those who are, do not. It is surprising how little obstetricians know of infant life. Too often are they ignorant of the rudiments of mental science. Few nurses have the patience, scientific spirit and knowledge of psychic development to report accurately the facts observed from child life. Perez and other psychologists have collated a number of isolated facts, taken in "occasional snap-shot" style from children brought before them for one or two "sittings" of half an hour's duration. I have found the "snapshot-sittings" method of little value. The most satisfactory results have been obtained by leaving the child to himself and noting his spontaneous acts, especially after self-consciousness begins to be felt by the child in the fourth month. Isolated facts from infant life are of little value. What are necessary are logical and continuous series of facts, scientifically observed, accurately and systematically recorded, from which the laws of mental development may be deduced. Such series of mental facts are essential in ascertaining the individual and racial evolution and in formulating the principles of education. None have such opportunities to study infant psychology, none are so well prepared to

observe the development in childhood as intelligent parents, *who live with their children.*

Following the ruling maxim of Froebel, "Come, let us live *with the children,*" from the child's first cry, I have been with him several hours each day, with the exception of three days, and at night, his bed has been at my bedside. My observations made from two to five times daily have not sprung from a desire to pass the time, but from an interest in ontogenesis and psychogenesis. I have guarded myself against parental prejudice, reporting the facts as seen, verifying all statements, taking no note of the dubious, performing the experiments and making the observations regularly and systematically, recording the results promptly and I trust accurately and clearly. No pains have been spared to ascertain the truth.

No vivisections, no amputations have been made. The child, an eight-pound boy, born on time, healthy and vigorous, at the end of his first half-year is hale, hearty and whole, growing and developing daily. At no time has the child been trained "to perform." All development has been spontaneous and natural, neither forced nor mechanical. The observations and experiments have been made when the child was "at his best." This usually being shortly after awakening in the morning or later in the day when he had slept and been fed.

The mother, interested in infant psychology, has given me valuable assistance in making observations on the child in my absence. Whatever she has reported as seen, I have verified before recording.

Owing to the limitations of the length of this thesis, I have been obliged to omit many notes, embodying in the brief treatise, only those facts that will exemplify the progress of the child from time to time.

FIRST WEEK.

First Day. The child is born crying. So different are the intra-uterine and extra-uterine conditions that the abrupt transition from the one to the other must be painful.

The light streaming in upon the ocular sense, the air in the room at a temperature of thirty degrees lower than that of the child's accustomed abode, pouring into his lungs, which never before have been in action, the decrease in the tempera-

ture of the surface of the unprotected body, the sudden removal of the gentle restraint and pressure to which it has been subjected, cast out, as it were, into a void, where head, trunk and limbs are free to move, must all produce sensations to the child extremely peculiar, if not quite painful. No wonder that his advent into the world is accompanied by cries.

A garment wrapped about the child quiets him. He sucks my finger three minutes after birth. Ten minutes later, when placed at the mother's breast, he does not hold the nipple when first put into his mouth, but a moment after, sucks as though he had been accustomed to do so.

Twenty minutes after birth the right eye is three-fourths open, the left eye opening some hours later. When the child is half an hour old, he holds the right eye open before the brilliant flame of a No. 2 Rochester lamp, with no apparent susceptibility to light. When born twenty-one hours, a bright light is painful, a dim one pleasurable to him. The eye-balls move in various directions, their movements being coördinated. They roll together up and down, right and left and *vice versa*, with an occasional, slightly oblique motion. My hand thrust before the eyes produces no reaction, nor does it until the ninth week.

The child's hands are held near the mouth, the legs are drawn up as in foetal life. When my finger is placed in the palm of his hand, his fingers close around it, the thumb, taking a supporting position. The prick of a needle on the arm, wrist or palm of the hand produces no reaction. When I blow my breath on the top of his bald head discomfort is manifest. A marked sensitiveness is seen, when I touch the lips and especially the eyelids, but no other parts of the body are so susceptible to touch. When the child takes the nipple for the first time, he makes a rooting motion. When he is held before the fire, he stretches out the legs and moves the feet and toes. When cold, he cries and the lips quiver. If he is fretting and I put my finger in his mouth, he sucks it a When his arm is pinched, no discomfort is shown er up the skin of the arm and pinch with the sam before, the child cries. In the former case, no number of nerve terminals are disturbed to 1 (Summation of stimuli). The same is shown wi

cold finger on his head, this producing no reaction, but discomfort is forthwith manifest, when my cold hand is laid on his head. A sharp cry is uttered when his head is slapped or scratched by his brother.

When the child is fourteen hours old, he winces at a loud noise made by a door slamming in the adjoining room, or the children's hallooing. When twenty-two hours old, he is startled and cries, when I snap my fingers near his ears, and bats the eyes, when I clap my hands at the back of his head. I can not agree with Preyer, who thinks that no child hears on the first day.

When the child is twenty-two hours old, I place a little vinegar on his tongue. The muscles of the face are contorted, the eye-lids are firmly closed and the lips are puckered. A little later, when a bitter substance is put on his tongue, even greater discomfort is shown. Three times the hands are quickly lifted to the mouth, and the head is drawn back from the cork that has the bitter on it. When sweetened water is given him, the tongue makes a licking motion and the countenance assumes a satisfied air. From these results, it is evident that the child hears and has taste discrimination in the early hours of his life.

Crying, I take him up, gently sway him in my arms and he becomes quiet. On the first day he coughs, yawns, hiccoughs, sneezes, and produces a lateral motion of his head.

Second Day. The eyes are wider open than on the previous day. When a burning match is thrust before them, the lids instantly close, the hands lying on the breast fly to the face, which becomes contorted, and a sneeze follows. When I put my hand between the child's eyes and the burning match they are opened. The coördination of the eye-movements seem well nigh perfect. No convergence of the eye-balls is as yet seen. There are frequent right and left, up and down movements and a tendency to move the eyes obliquely.

The auditory centers are developing. The reactions, when noise is made, are more manifest than yesterday. On my making a sharp, squeaking sound with the lips such as horse-men use in urging their horses, the child is disturbed. The eyelids close, the head moves, the body trembles and the hands lying quiet fly to the face.

The child as on the first day cries when his body is sponged off, but when dressed falls asleep and rests five hours. When crying, he becomes quiet if I rock him. His greatest panacea is to have the feet uncovered before the fire. Lying in my lap near the fire, he soon falls asleep. On tickling the soles of the feet with a straw, the legs are stretched out and drawn in again. This seesaw motion continues as long as the stimulus is applied. When the straw is drawn between the toes, they are moved, the right toe spreading out at almost right angles. When the straw is drawn along the hip or lower part of the leg, there is no reaction. The child being asleep when these stimuli are applied, the movements are all reflex. There is no visible sensation when I touch the top of the head with the straw, but a scowl when it is drawn across the head. (Summation of stimuli.) When I touch the cheek with the eraser on my pencil no sensation is produced, but when the eraser, having been dipped in cold water, is applied there is a reaction in the facial muscles. The hands and arms are moved more than on the previous day.

The child licks one of my fingers that has touched *asafoetida*. The expression is a very distasteful one, and a cry is uttered. On touching the lips with an object, the tongue comes forward and slightly protrudes. When he is hungry the lips have a smacking motion. The tongue is moved about more than on the previous day. It is carried from the floor to the roof of the mouth and is often curled inward at its margins.

The child sleeping twenty-two hours the first day, I had no opportunity of testing his power of smelling. A piece of *asafoetida* is placed near the nostrils and presently there is a quivering of the eyelids. The *asafoetida* being hard and dry, I break open and place the freshly broken pieces before the nasal passages and a much stronger quivering of the eyelids follows. I then hold the drug within the nostrils and against the membrane and great displeasure is shown. After the *asafoetida* is tasted it is placed within the nostrils and there are gagging and vomiting symptoms. The neck is stretched, the head is moved forward, the mouth is opened and the tongue is protruded. From this it is seen how intimately taste and smell are associated in the early hours of life.

Third Day. The eyes are gradually opening and becom-

ing more susceptible to light. Discomfort is shown when a bright light is held three feet from the child. A newspaper being placed between him and the light, the eyes are opened. Removing the paper and holding the lamp six feet away the eyes are opened as in daylight. The eye movements of the first and second days have grown stronger and are more frequently made, the oblique motions being perceptible.

The senses, taste, hearing and smell are developing. The end of a match is dipped in weak salt water and the tongue touched with it. The facial muscles manifest as much displeasure as when the asafœtida was tasted and smelled, though the reaction produced by the salt water is of shorter duration. A piece of lemon put on the tongue stimulates reaction, but less than that caused by the salt water, there being no vomiting and choking movements.

Hearing is more acute than on the first and second days, a little noise disturbing the child.

* The olfactory powers are growing stronger. When the asafœtida is brought near the nose, discomfort is evident. When I place my fingers that have held the asafœtida to the lips the head is turned sidewise, and thrown back as far as neck and pillow will allow. The hands, thrown up, are clasped together, seeming to make an effort to obtain relief and in the meantime the child is crying loudly. There can be no doubt as to his hearing, tasting and smelling in the first days of his life.

On the third day, he sleeps twenty hours. The following experiments are made while he is asleep, without awakening him. Touching his head with a piece of iron, its chilliness disturbs his sleep. A response is given when I lay my hand which has held the iron, on his head, but no disturbance is made when I lay my hand on his head after having warmed it at the fire. I draw a straw over the eyes and down the right cheek. The head is turned toward the left and at the same time the left hand lying lax on the breast is lifted quickly to the right cheek, the right hand remaining motionless. On drawing the straw along the edge of the lower lip, it is protruded and the hands are clasped.

The following touch and temperature experiments are performed while the child is awake. His hand, arms and legs

are pricked with no response. But when the sole of the foot is lightly touched, there is a quick withdrawal of the foot pricked and a movement in the untouched foot, but there is no facial disturbance. If the bottom of one foot be tickled, there is a withdrawal of the foot touched, but no reaction in the other. If the sole of the foot be touched with a chilly piece of iron, the foot touched is suddenly withdrawn and there is a movement in the other foot. There is also a facial disturbance, which did not occur in tickling and pricking the feet. If the leg is touched with the iron there is no reaction. I touch the bottom of the foot with the spoon heated, though not so hot but that I can hold it without discomfort and quick as a flash the foot is withdrawn; the other one moved and the child cries. When the sole of the foot is touched by the head of a needle heated more than the spoon, there is a withdrawal of the foot touched, but no movement of the other foot or of the facial muscles. (Summation of stimuli.) When the head of the needle is reduced in temperature below that of the air in the room, and applied to the feet, with the same degree of pressure as before, there is no response.

The skin of the forehead is now thrown into horizontal folds. The hands are kept in motion much of the time, in the child's waking hours. They are largely moved about the lower part of the face. They, however, are held higher than on the first day. When not in motion they much of the time lie clasped. This is their position in sleep. The fist is frequently sucked, held in the mouth by the other hand. He makes as much use of the left hand as the right.

Fourth Day. The eyes show a growing intelligence. The blank stare of the first day is disappearing. The hands are now frequently lifted to the eyes and forehead, and the arms are stretched out full length.

The nurse unable to quiet the child, even by holding the feet before the fire and by carrying him about the room, I suggest from the nature of his cry that he is hungry. He is placed with the mother, and no sooner is he at her side than he ceases crying and begins a rooting motion. The mother's breast lies uncovered, but this the babe does not see, nor touch, much less recognize as the source of his food. It then must be the scent of the breast or the odor of the milk that

pacifies him and stimulates the rooting motion. The fist is now put to the mouth with fewer attempts. Much of the time, whether awake or asleep, the thumb, with one or two fingers, is sucked. While lying in my lap, the fingers having gotten out of the mouth, he repeatedly tries to put them back again. He succeeds in getting the fist to the mouth, but the fingers are what are wanted. Failing to get them into the mouth, he begins to cry angrily. There is determination in the cry, and the face and head show an angry mind. There is no reason to doubt the beginning of will in the repeated attempts to place the fingers in the mouth. Anger is evident from the determined cry, the gestures and the sudden reddening of the face and top of the head.

Fifth Day. About ten inches from the child's face, I hold a toy candle lighted. His eyes are fixed on the candle for thirty seconds, not a muscle moving. Accidentally the candle is moved to the right, leaving the left eye shaded. He immediately moves the head to the right until the light again shines on both eyes. I then intentionally move the candle several times to the right and left and the child each time turns the head in the direction of the moving light. Not only does he follow the light in general, but the eyes are fixed on the flame and remain so, though I move the candle a dozen times. He may not, as some psychologists contend, see objects as objects or the real form or outline of the flame, but he does consciously follow the brightest part of the light. Will power is here exercised. The turning of the head in the direction of the moving candle is not simply spontaneous or reflex action, called out by the light as a stimulus. The light produces a pleasurable sensation, and the head is turned in the direction of the light's greatest intensity, this causing the greatest pleasure.

The mother and the nurse early in the morning said they had seen the child smile. I replied, "That cannot be, as he is less than five days old." About the middle of the day, after he has slept and been fed, seeming to be in excellent spirit, I take him and observe that his face is brighter than usual, the eyes wider open, the countenance presenting a more intelligent look. Presently there appears an expression very much like a smile. After some minutes the same look is repeated and so

intensified as to leave no doubt as to its being a smile. The angles of the mouth are elevated, the eyes twinkle and the muscles of the face assume a hilarious contraction. Shortly a smile more intense than the second occurs, the child looking up into my eyes, this without doubt being unintentional. Later in the day he smiles again several times. There is much evidence that will is already afoot and anger is able to be aroused. Why, then, may not a real smile occur as early as the fifth day? The child having slept and fed is feeling in the best of humor. His discomforts are all the results of physical ailments. His cries and frettings are caused by hunger, cold and wet. It is true that the stimulus of the smile at this period is not a mental one. The child can not reciprocate a smile from its parents in these early days. As yet, he knows not the human countenance. But these smiles nevertheless are real; organic smiles they may be called, their stimulation residing in the bodily feelings. As conscious and intentional movements spring from those that are impulsive and reflex, so the intellectual smile, that which is mentally stimulated, must take its rise in the organic smile, which occurs as early as the fourth and fifth days.

Sixth Day. The child laid at the mother's breast takes the nipple of its own accord for the first time. The fingers of either hand are now readily put into the mouth. When I pull them some distance from the mouth, they are invariably carried back to it. There is a sharp contrast in the sucking of the first and sixth days. Soon after birth, there was a licking of my finger, an almost unfelt pressure of the lips. There is now a decided pulling, a forcible lapping of the tongue about my fingers, and the gums are brought tight against them, requiring some effort to withdraw them. The muscles in six days have grown comparatively strong and the tongue has gained aptitude in its movements.

Seventh Day. Several oblique movements of the eye-balls are seen. When the candle is moved above the eyes from a position in front of them, the lids are raised showing the white portions of the balls. Several times both the lids and eye-balls move upward following the candle. If the candle is moved horizontally out from the eyes, beginning at a point ten inches from them, this seeming to be the distance for clearest vision,

there is motion neither of lids nor balls, but an expansion of the pupil. When the candle is moved toward the eyes from the ten inch point, the pupils contract and the lids gradually close as the light approaches.

The child is attracted by my white shirt front, when the candle shines upon it. Twice he looks intelligently into my face, and shortly afterwards into my eyes, his eyes remaining fixed on mine for half a minute. These looks are not the blank stare of the first day. Intelligence is dawning though as silently and gradually as the gathering twilight. Neither the hour nor the day is known when it came. When I make a low, murmuring sound, a drowsy lullaby, the child's eyes seem to stand in beautiful astonishment. His look into my face appears to bear with it the questions, What is this white, shining, kindly object before me? What the sweet sound that is so soothing to me? How different from the loud din made by those three objects (his brothers and sister) continually running here and there, whose deafening clatter makes me startle and even fear for my life!

When I make a mournful sound as the howling wind or a dull thudding noise as is made by the buzz-saw, the child is painfully disturbed. Toward the close of the day, several times the eyes are fixed for a moment on the candle flame; seemingly with intention. But attention, if it is real, is weak and of but few moments' duration.

Summary of First Week. From the few impulsive movements in the early hours of a child's life, many reflex movements have been called forth by the stimulation of the various members of the body through nature's agencies and my experiments. Gradually from these movements are evolving movements that have elements of will in them, as is seen in the repeated replacing of the fingers in the mouth, when I pull them away from it. Attention is dawning as is manifest in the transition from the vacant stare of the first day to the rather intelligent gaze at the candle flame, my shirt bosom, face and especially my eyes on the sixth and seventh days. The emotive powers are already active, which may be discerned in the hungry, painful, angry cry and the fretful caused by cold and wet. Anger is seen in the self-willed cry, the accompanying gestures and the sudden reddening of the face and

head. The frequent smiling, beginning with the fifth day, though induced by organic conditions is the rudiment of the intellectual smile, which in a few weeks will be prompted by ideas.

The acute sensibility to touch, heat and cold is seen in the reactions of the various members of the body when stimulated. The limbs are now seldom held in their foetal position, being stretched out full length, and in the child's waking hours are in almost constant motion. The eye-brows are raised throwing the skin of the forehead into horizontal folds. In anger or pain, these corrugations are perpendicular.

The eye-movements are various, from right to left, up and down, oblique and a tendency to convergence when the candle is brought within the ten-inch distance. The varied experiments testing taste, hearing and smell prove that these senses are active and growing stronger from day to day. The eyes are developing a brightness, an attentive look. There is a growing intelligence in their fixed gaze.

If, in the case of a child born on time, we could compare the development made in the first week of his life, with that which would have been made had the foetal period been prolonged another week, we then could be able to see clearly the influence of conditions and the proper stimuli in calling out the dormant powers. No educational principle has been uttered that comprehends so much as that, "Exercise develops faculty," That intellectual evolution is only induced by the application of proper stimuli.

In the uterus the body and limbs are not free to move. The movements are principally impulsive, the few reflex movements being responses to undue pressure, heat and cold. Hence no opportunity for will development, which requires freedom of motion. In the intra-uterine life there can be no attention, this arising from free movement and vision. No sight, its only stimulator light, being absent; no hearing the organs of this sense, being immersed in amniotic fluid, through which sound can not well be transmitted, were the auditory centers sufficiently developed for hearing. There may be a rudimentary taste, the child from time to time swallowing the amniotic fluid, but in the intra-uterine life there can be no

taste discrimination, as is developed in the first hours of extra-uterine life.

In no four successive weeks of the first half-year of the child's life, have I seen so great a development as in the first week. The development in the first three months of infant life is much greater than in an equal time at a later period. Likewise is the development during infancy, the first three years of child-life, great as compared with that which takes place in the same time in childhood. How rapid and discernible the development in childhood as compared with that in adult life! Herein lies much of the interest in observing infants and instructing children. Comenius, Pestalozzi, and Froebel saw the intellectual and moral seed-time and accordingly formulated their principles of teaching and methods of instructing. These educators, who have given us about all our pedagogy, saw the importance of emphasizing the intellectual, moral, religious and physical education in the first seven years of life. Comenius insisted that education be carried out while the mind is tender, the brain pliant, the Creator having made childhood free from cares that the human being might be educated to full humanity; and that is only firm and stable which has been imbibed during the earliest years; Pestalozzi encouraged the education of the mothers that the children might long remain under their tender care and maternal instruction; Froebel, despaired of the proper education of the mothers in the welfare, instruction and training of their children, and insisted that the kindergarten take the children at the age of three years, the time, when they first can well leave the mothers, and nurture them in that period, from three to seven, upon which so much of the success in life depends, that period when language, religious and moral habits are crystallized, when the imagination is vivid, credulity greatest, when memory is budding and blossoming, when will and reason are laying their thresholds.

FIRST MONTH.

Movements. Ninth day. The eyes and head are turned toward the candle. Eleventh day. The movements of the eye-balls have become irregular. Twelfth day. The eye-balls are converged, A slight strabismus is seen. Fifteenth day.

The arms are stretched over the head, and the legs, at the same time are extended full length.

Seeing. Twelfth day. Looks intently into my face and is interested in the wall-paper, the fire, and the nickel on the stove. Crying, he becomes quiet when a light is made. Sixteenth day. Follows a red worsted ball when swung before him. Is interested in a white cloth hung near him. Seventeenth day. Looks intelligently up into my face.

Hearing. Has become accustomed to the noise of the children, being no longer disturbed by it. Twelfth day. His hands are thrown up when I make a rumbling sound. Seventeenth day. Appears to appreciate the kindly voice of the mother when she speaks to him. Twenty-fifth day. The washer-woman, entering the room, speaks in a loud, shrill voice and the child fixes his eyes upon her. Twenty-eighth day. He is seemingly delighted when the mother speaks to him, while he pays no attention to his five year old sister's talking to him.

Attention. His attention is growing stronger from day to day, as is manifest in every look. Sixteenth day. While lying in his bed, the eyes and head are turned toward me as often as I pass by. Is much interested in the red ball. He is more attentive to moving objects than to still ones. Twenty-second day. A little neighbor girl comes to see him. As long as she is near he does not remove his eyes from her face, knowing it to be a strange one. Twenty-fourth day. Is interested in the red dress that his mother is wearing. Twenty sixth day. Lies in his bed, watching the white shade on a hanging lamp near him for ten minutes. Twenty-seventh day. Looks in astonishment at a moving tapestry.

Emotions.—Joy. Almost every day after the fifth, he is seen to smile. He is pleased to have the mother talk to him, carry or rock him, or "toast" his feet at the fire. Assumes a pleased expression on seeing colors, as the red ball and mother's red dress, white rag, and lamp shade. Twenty-fifth day. Lying in a dimly lighted room, crying, becomes quiet when the light is turned up. Twenty-seventh day. Is fretting in his bed, but when propped up a little, looks about the room. Twenty-eighth day. The organic smile has become an intellectual one.

Sorrow. Sixteenth day. The little brother bites his

finger and his cries are most piteous. Twenty-first day. In a colicky cry, accidentally utters "ma, ma." Twenty-fifth day. Tears are seen in his eyes for the first time. They are not globular, the eyeballs being suffused with the moisture. Globular tears appear two weeks later. I have noticed that tears and the mental smile appear about the same time.

Anger. Twenty-third day. He becomes quite angry when I remove his hand from his mouth. The head suddenly reddens and he screams in tones of determination, stretching the legs out and bracing them against my abdomen with such force as to move his body. When I place the fingers back to his mouth, the passion subsides.

Will. Will is manifest in the various movements of head and limbs, attention and in his angry cries. Twelfth day. When I make a heavy, buzzing noise near his ears, he is pained, throws up his hands, and turns the head away twice that the sound may not directly strike the tympanum. Seventeenth and eighteenth days. When lying on my knee, he succeeds in lifting up his head about an inch.

SECOND MONTH.

Seeing The eyes not only follow moving objects but fix themselves on still ones and are constantly hunting things of interest. Much of the child's time is spent in looking about the room.

Hearing. Forty-first day. Becomes excited, moving the limbs and breathing rapidly when I ring a bell near him. For several days he has manifested pleasure on hearing singing. Forty-third day. Fretting, he becomes quiet and attentive when I sing. Forty-seventh day. The mother, being absent several hours, on returning speaks to him. When he hears her voice he begins crying and becomes quiet only when she takes him. He does not turn to the mother when she speaks but commences to fret, knowing the voice, but is, as yet, not able to discern the direction of sound.

Smell. Forty-fourth day. I place the nozzle of a bladder near his nostrils. He turns the head away with a distasteful look and cries if I continue to hold it near him.

Attention. Thirty-fourth day. His eyes follow me as I cross the room. When I swing the red ball before him, his

whole nature is animated; the hands, feet and legs are active, the eyes are widely opened and are fixed on the ball when it comes to a rest. When I turn his head from the white lampshade, he turns it back and searches for it until found, when the attention is again fixed upon it. Lying in the mother's lap, he looks up into her face with a mingled look of delight and surprise. His countenance has the appearance of having discovered the human face or of interpreting the white, kind, oval object that he has always seen. The attention is riveted. The facial expression is one of intense wonder and curiosity. It is the strongest attention, I had seen him manifest. I approach where he can see me and he fixes the eyes on my face for a moment, then turns the head, looking up again into the mother's. From this time nothing is so attractive to him as the human face. He coos at the red ball hung before him. Thirty-seventh day. Several times he smiles at me when I look at him. Forty-seventh day. He no longer likes to lie when awake in his bed, but wants to be in my arms or the mother's. Fifty first day. Lies on my knee and looks out of the window half an hour. Fifty-third day. Rolls the eyes upward to see me as I pass around him. Playing quietly by himself, as soon as he sees the mother or me he begins to fret and continues to do so as long as we are in the room unless we take him up.

Memory. Memory is as it is seen in his searching for the lampshade on the thirty-fourth day. Each morning the mother has been wont to carry the child from his bed to the fire, there uncover his feet and change his diaper. On the morning of the thirty-fourth day not doing as was her custom, having taken a seat by the fire, he cries until the diaper is changed and the feet are uncovered. Here is shown how early habits are formed. Fiftieth day. When I speak to him lying in his bed crying, he smiles; cries when I leave him, but becomes quiet when I return and touch his arm. Fifty-seventh day. He knows the mother's voice; has a memory for faces, being pleased to have those near that he knows and is afraid of strangers.

Will. Will is manifest when on the thirty-fourth day he cries to have his diaper removed and the feet "toasted" before the fire; in his repeatedly turning the head back to gaze at the lamp-shade; when on the thirty-eighth day he frets to

have the head elevated that he may have a better opportunity of looking around the room; in his bringing the body onto the feet when I assist him a little; in his repeated efforts on the sixty-first day to hold the head up.

Emotions—Joy. Thirty-second day. Delights in having a light in the room and cooes at the wall-paper. Thirty-fourth day. Pleasure in the human face, dating from this time. Thirty-seventh day. Smiles when I bark at him like a dog. Thirty-eighth day. Pleasure is shown in his surveying the room. Forty-sixth day. Smiles when I ring a bell near him. Forty-seventh day. Ceases crying when I sing to him. Has a play in which his whole being is animated. Fifty-fourth day. He reciprocates my smile for the first time. Laughs almost aloud when I strike him on the head with an inflated bladder. Fifty-seventh day. Is much pleased on seeing the mother after a brief absence.

Surprise. Several times in the month the child appears surprised, as in my barking at him, in his interpreting the human face, and when on the thirty-seventh day I stealthily approach him from behind, making a noise, the eyes are opened wide, showing much of the white portions.

Sorrow. Forty-first day. His brother having struck him he begins screaming, and presently I see the inner canthi fill with tears, while from the outer canthi a tiny stream trickles forth. Forty-eighth day. The tears are distinctly globular. Fifty-third day. Tears are seen to overflow the cheeks.

Fear. Forty-first day. Cries when a strange face comes near him. He is much frightened when the children rush in, saying, "There's something in the other room." His fear is caused by their rushing in, hallooing and my suddenly getting up. He becomes quiet when I hold him close to my breast. Fifty-eighth day. Is afraid for a moment, on seeing his mother in a green dress.

Anger. Thirty-fourth day. When I stop rolling his carriage, his body is stiffened, the face reddened and a cry follows. He is pleased when I resume the rolling.

THIRD MONTH.

Seeing. As late as the Sixty-first day, there is no reaction, when I thrust my hand before his eyes. However, when I

touch the nose or lashes, he winces, and after a few minutes, through association, there is a reaction on my bringing my hand before the face, though I do not touch it. From the sixty-fourth day, there is always a reaction, when an object is brought suddenly close to the eyes. In the twelfth week, he looks at his image in the mirror, smiling and cooing.

Hearing. Sixty-eighth day. The mother states that the child turns toward the clock, when it is striking and that several times in the past few days he has turned in the direction of the sound of her voice. Sixty-ninth day. Lying on his side with the face from me, when I shake a tin can with some pebbles in it, he turns in the direction of the sound, looks up at the can, then into my face and smiles. Seventieth day. His little brother approaches him from behind, speaks to him and he rolls the eyes upward to see who has spoken. Seventy-first day. Stealthily I approach him lying on his side with the face turned from me. I begin a low whistle and though his attention is engaged at the time by his brother, he turns the head toward me and rolls off the pillow.

Smell. On the eighty-fourth day, I hold a delicately odored hyacinth near his face. He smacks his lips, protrudes the tongue, evidently enjoying the fragrance.

Attention. Attention is growing stronger from day to day as is seen in all that the child does. A marked development is noted in the tenth week in his attention to various sounds and objects. He is not only now attentive to sounds but facial expressions. On the sixty-eighth day, when I speak in mournful tones, assuming a sad countenance, the corners of his mouth gradually descend, and he begins to cry. When I talk to him in an animated manner, or whistle, he smiles. Seventy-eighth day. I speak to him from behind. He begins to search for me. Finding me, he looks into my face and smiles. I suddenly drop down to the floor; not seeing when I go, he hunts for me. When I speak he turns the eyes downward and is pleased on seeing me again. Eighty-second day. He is interested in my honing a razor. Follows the movements of the razor, now and then looking into my face smiling. His attention is now fixed upon the mother and me, when in an adjoining room. Ninety-first day. He plays for some time cooing and smiling at the lampshade. During the monologue

his whole nature is active,—the eyes beaming and the limbs in motion. The play is only broken off, when he hears my foot-steps approaching.

Memory. Seventy-fourth day. Fretting from hunger, refusing to be quieted by me, he begins screaming when the mother passes by without taking him. Here is evidence that the child associates the mother with the idea of food. Having been absent three days, on my approaching him, he is afraid of me. Here is shown the weakness of memory at this age. After I have been in the house fifteen minutes, he is as friendly and as much delighted with me as before my absence. His recognition of me after a short time must have been brought about by the association of my looks, voice and acts, not being able to recognize me at first by my looks alone. By the eleventh week his love for the human face and company has grown very strong. From whence comes this love? Through association. It is the mother that feeds him, warms him, dries him, talks to him in the kindest tones, which he has learned to appreciate, sings to him, rocks him and sympathizes with him. He has gradually learned to associate all this with that bright, cheerful face that is near him night and day, affording him all his pleasures, ministering to his wants and alleviating his discomforts. No sound so delights him as the human voice; no color so pleases as the human face. Association has wrought all this.

Will. For some days, he has been trying to hold his head up. In the tenth week, he succeeds in balancing it for a moment's time. By the beginning of the twelfth week he is able to hold it erect with but little effort. Since his earliest days, he has sucked his fist or thumb together with several fingers. For ten days he has been trying to put the thumb alone into his mouth. In the tenth week, he succeeds in doing this. The sucking of the thumb becomes his great panacea, sucking it night and day, when awake and when asleep, sometimes being the right, sometimes the left thumb, oftener the former. By the twelfth week, he readily comes to his feet when I lightly assist him. Eighty-eighth day. Being with me, he begins to cry when the mother passes him. When she has taken him, I hold out my hands to him. He knows what it means, turns away his head and looks up into the mother's

face. Ninety-first day. While being bathed, he slips, throws out the hands and clings to the sides of the basin.

Emotions. In the tenth week, he becomes attentive to the human voice and facial expressions. Cries when I assume a sad countenance, and make a plaintive sound. Smiles when I look joyful or speak in pleasant tones.

Joy. Seventy-eighth day. Laughs aloud for the first time. Coos at me when I talk to him. Eightieth day. Smiles and coos at the mother working in an adjoining room.

Fear. Sixty-seventh day. A rocker of the chair in which I am rocking the child breaks, throwing us over. He is much frightened, the mother only being able to allay his fears.

When I think of the child as he came into the world and look upon him at the end of the third month, with his smiling face, intelligent look, artful movements, then only can I realize the development of intellect, the emotional and active powers that has taken place.

FOURTH MONTH.

Attention. Ninety-second day. The child is at the window, when he hears sleighbells some rods away. He watches the horse and sleigh as far as the window casing permits. One hundred and fourteenth day. Looks at a doll's face, then at the mother's, and *vice versa*, as if comparing the two, or as having the mother understand that he appreciates the doll. One hundred and nineteenth day. When the mother and I are talking, he throws back the head and looks into the mother's face, then peers around into mine, saying a, a a, as if joining in the conversation. He is growing fond of the other children. Is glad to have them near him. One hundred and nineteenth day. He is interested in the colored picture of a baby. His attention is fixed upon the face of the picture. Whistling and patting my foot with him on my knee, he listens to know the cause of the patting sound. One hundred and twentieth day. He prefers the pictures of children to those of the lower animals and inanimate objects, having a better acquaintance with human beings. In holding a piece of red cloth and one of blue of equal intensity of color, before him, he looks at one then the other; but has more interest in the red upon which his attention is finally fixed.

Memory. One hundred and eighth day. I give him a drink from a cup. Some time later, I pour some milk into a cup and begin to feed him with a spoon. He refuses to take the milk from the spoon. Turning his head away from it, he grasps the cup and carries it to his mouth. I remove the cup from his hands, but he seizes it again and greedily lifts it to his mouth. One hundred and ninth day. Crying from hunger, he becomes quiet, seeing the cup and spoon brought. One hundred and fifteenth day. As I approach his bed with him in my arms he stretches out his limbs, stiffens the back, thinking that he is to be laid down. One hundred and twentieth day. Hearing the sound of the mother's footstep approaching, he ceases crying.

Will. Ninety-second day. While sitting in his mother's lap, I hold out my hands for him to come to me. With effort and an awkward side motion, he succeeds in stretching out the right hand, which had been lying at his side, and in taking hold of the fingers of my left hand. At the same time the left hand fails after a struggle to reach my right hand. The child realizes what he has done, his countenance assuming a pleased expression. Four or five times his right hand takes my left, each time with less effort than before. But after a second trial he makes no effort to stretch forth the left hand. In the first weeks, the left hand was used as much as the right, but gradually, the right has been outstripping the left. In his taking my hand there is manifest much mental progress. He has a knowledge of my hand, has a desire to take it, some notion of what he has done with his hands, an idea of what he can do. Effort, will, coordination of the muscles, arm and hand, adjustment of vision, will and muscles are shown. The effort to put forth the hand, the struggle to control the movements of arm and hand manifest the strength of the growing will. The force of habit is seen in that the right hand is lifted each succeeding time with greater ease, while the left, unsuccessful, discouraged makes no effort after the second failure. Ninety-seventh day. Reaches after paper, crumples it up, enjoying the noise. Takes my thumb and carries it to his mouth. One hundredth day. In giving him medicine, he grasps the spoon and holds it to his mouth and licks the medicine from it. One hundred and sixth day.

When I hold out my hands to him, he stretches out both of his and takes mine. One hundred and seventh day. He reaches forth his hands to his image in the mirror. One hundred and sixteenth day. Takes bits of paper, sticks or any small object from my hands. When at the breast or holding the thumb in his mouth, he will seldom forego his sucking to take an object held before him, while most usually he will stop sucking and take my hands when held out to him. He, no doubt, holds the cold stick or lifeless paper in sharp contrast, with the warm hand, that supplies his needs and caresses him, that lifts him up and carries him about. One hundred and eighteenth day. In play with him, in moving my head back and forth, he tries to grasp my nose and when I come near, he inclines the body, opens the mouth to catch my nose in it. One hundred and nineteenth day. When a spoon is removed, after feeding him, he looks after it and begins crying. The growing power of will and muscular control is seen on the one hundred and twentieth day when he takes a stick from my hand into his left, changing it, with some effort, to his right hand without letting it fall.

Emotions. One hundred and second day. For several days past, we have talked to the child, petted him and sympathized with him in his coughing. If now we are not near when he coughs, he looks about for us, craving our sympathy; is disappointed if he does not get it. One hundred and twentieth day. I take him on my knee and begin to sing, "Where is my wandering boy to-night?" He is in the best of spirits but as I sing the angles of the mouth descend and as I continue to sing with more feeling and reach the more pathetic tones, he cries most pitifully. The mother only is able to console him. I take him again; once more sing the song affecting him as before. When, however, I begin to sing in a spirited manner, "Whosoever will may come," he is soon smiling. Often since have I sung to him, causing him to smile or weep, depending upon the nature of the song sung.

Fear. He is more readily frightened than in the early weeks of his life, especially since the chair turned over with him. He cries from fear now, if he rolls off his pillow.

Self-consciousness. Self-consciousness is gradually dawning as is seen in the fixed attention, will, movements, craving

for sympathy, his romps and smiles at his image in the mirror, his interest in the pictures of children, his look of appreciation when taken up, spoken to or given something.

Summary to the End of Fourth Month. The development in four months seems almost phenomenal. Most of the adult powers—attention association, memory, comparison; will, joy, fear, sympathy, sorrow and self-consciousness are in action. The child is attentive to every sound, be it a noise, talking, whispering, singing or whistling. He loves the human voice, knows the human footstep, delights in being talked to, often joining in the conversation with his "oo oo, a, a, o-oo, o-oo, oo-a." When lying half asleep he discerns the direction of my voice. Is interested in the children's plays; is attentive to all that goes on around him; makes an almost constant use of his hands, pulling hair and seizing everything that is near him. In the fourth month there has been a rapid growth of coördination and artful use of the muscular powers. Stands upright when his hands are held. Associates the cup and spoon with water and food. Appreciates what is done for him; is easily frightened and craves sympathy.

FIFTH MONTH.

Attention. The child now occasionally becomes momentarily so interested in objects that my speaking to him, or offering him food does not withdraw his attention. He has become interested in the plays of the children. Is pleased to have them talk to him. Strange to say, he pays no attention to the mother's breast or does not recognize it until the one hundred and twenty-fourth day. He prefers red to any other color. One hundred and twenty-fifth day. I place a large piece of bright blue cloth before him and a small piece of red. His attention is mainly given to the red. One hundred and twenty-sixth day. I hang a piece of bright yellow and a piece of dull red cloth before him. He prefers the dull red to the bright yellow. Eighteenth week. For two weeks he has been carefully observing his fingers. He now amuses himself by spreading them apart and flexing them upon the palm. Has become as much interested in his feet as in the hands and fingers. One hundred and fortieth day. He is greatly delighted in my playing "peek-a-boo" with him, watching

intently for my reappearance, peering around to find me, laughing and chuckling each time when he sees me. One hundred and forty-fifth day. Notices for the first time his own and the children's shadows on the wall; follows their movements, laughing and cooing at them.

Memory. If I am absent six or eight hours, on my return he knows me as is attested by his smile, dancing eyes and motion of the limbs. One hundred and forty-second day. When lying in his bed crying, becomes quiet when he hears the mother's voice and step at the foot of the stairs. He likes a cup or spoon associating each with the idea of food.

Language. The articulate sounds I have heard him utter thus far are m, h, w, a, a, a, o, oo, oo, e and y in combination, as eya. The earliest consonant and vowel sounds uttered and as yet the ones most frequently made are "m" and "a." The first combination of sounds heard was "ma, ma," uttered in a colicky cry in the third week. On the one hundred and twenty-sixth day, the mother trains the child to come to his feet when she takes him by the hands, slightly lifts him and at the same time says, "Be a big baby." His coming to his feet on hearing these words is the result of mere mechanical training. Liking to stand on his feet, prompted to do so, and hearing the encouraging words, "Be a big baby," he puts forth an effort to rise. He has no knowledge of these words, for he attempts to get up on giving him your hand and speaking any other phrase. However, he makes no effort to rise if his hands be taken and is not spoken to in an encouraging manner. A child at four months old is an intelligent animal. I am led to believe that some of the French children brought to Perez for observation had been mechanically trained. Some of them seem "to perform" or are precocious beyond their age, as for instance in the case of Mary, three and a half months old, who on being asked where her feet, hands or arms were, would look at them. Parents unconsciously train their children to think, speak and act in certain modes. Herein lies the force of the family life, social conditions and environments in the education of humanity.

One hundred and twenty-seventh day. The child looks about the room when the mother asks, "Where is papa?" On the one hundred and fiftieth day when asked this question by

the mother he turns to me a number of times. The following day in my absence he is asked "Where is papa?" and he looks about the room in a searching manner. When I return, on being asked the question, he turns to me as on the previous day. He not only has ideas but properly knows and associates the words, "papa" and "mamma" with his clearest formed ideas. He has learned to associate the word "papa," which he has often heard, with the object that has been near him always.

Will. The hands are made to serve the mouth, the body to administer to the hands. One hundred and twenty-fifth day. The day after recognizing the mother's breast, he puts the nipple into the mouth with his hand. One hundred and fortieth day. When the red ball is swung within reaching distance, both hands suddenly come together around it. If the ball is one inch too far away, no effort is made to seize it. The right hand is stronger, more apt and active than the left. When he is fed with a spoon, he grasps it with both hands and some effort is required to take it from him and which is always accompanied by a throwing of the limbs and passionate cries. He prefers a stick in his hand to any other object. The reason for this is clear. In seizing the stick, in bringing the fingers firmly around it, both the grasping and the weight of the stick stimulates the muscles. Then, too, it is a pleasure to sweep the stick through the air and beat other objects with it. One hundred and fifty-seventh day. Lying on a couch not far from the wall he notices the figures on the wall-paper though they are neither bright nor clearly defined. He stretches the hands toward the figures but is not able to reach them until he moves his body.

Self-consciousness. One hundred and twenty-first day. Plays a long time with his fingers. One hundred and twenty-third day. Holding a stick in his right hand, he strikes the side of his carriage. Is surprised at the noise made; is conscious of having made it; strikes again and is delighted. He is manifesting a growing love of power. One hundred and thirty-eighth day. He takes a book from my hand and accidentally drops it over the arm of the chair. Seeing the book disappear and hearing the noise, he leans over the chair arm and looks at the book lying on the floor. As often as I

pick it up he takes it and throws it down. Reason is here astir. He infers that the book when thrown down the first time is the cause of the noise and that it will make a noise again if thrown down. He also, judging from the expressive look he gives me, knows that as I have picked up the book once for him, I will do so again. Twentieth week. For some weeks he has been laughing at his image in the mirror. He is now more attentive to it. For three days after seriously looking at it he has begun to cry. His crying may be caused from his grave looks with which he examines the image, or it may be the result of jealousy, possibly of his not feeling in a good humor. However, I have placed him before the mirror when in the best of spirits, at first even smiling at his image; but after a careful look at it, he begins crying. His countenance and cry are not of fear. On the other hand, he has never shown jealousy toward the other children. One hundred and thirty-fourth day. When he is held upon his feet on a table or is elevated and spoken to in laudatory tones as, "See the big boy," he assumes a look of pride and wears the expression, "Who but me?" One hundred and fortieth day. Lying in his bed, in a conscious, coyish manner he looks at me and smiles. When I reciprocate his smile, he roguishly, as if enticing me to play, turns his head away, glancing coily back. The ego is evidently afoot as is seen in his attracting the mother's and my attention to himself, when we are talking, by his guttural "a, a, a." He delights in listening to the noise made by himself in rubbing his shoes together. There is an element of personality in his turning from the bell to me and smiling when I ring it near his ear.

Emotions. He is restless in the mother's arms and I ask her to speak to him in a scolding manner. His feelings are greatly wounded; crying, he looks across the room at me, though not saying a word to him, with the most pitiful expression, evidently asking for sympathy. By kind words the mother pacifies him. He often lies in bed for several minutes smiling at me; begins to coax me to take him up. If I do not he frets and finally cries. He frequently becomes angry, but his passions subside as suddenly as they arise.

SIXTH MONTH.

During this month there has been a marked development in the child's attention, memory, will and emotive powers. There is a growing tendency to articulate speech as is observed in his scolding and coaxing. The random inarticulate sounds are gradually becoming articulate. The new sounds heard are *de, de, ze, ze, za*, this being the first time that the long sounds of any vowel have been uttered.

Are not articulate speech and right-handedness somewhat synchronous in their rise and development? I have noticed this simultaneity, especially in the sixth month. Is there not some real connection between the two, the left cerebral hemisphere controlling the movements of the right hand and being the seat of articulate speech?

On the first and last days of the month the following cranial measurements were taken, the first figures in each group being the measurements at the beginning of the month, the second at its close. From the top of the root of one ear across the middle of the fontanelle to the top of the root of the other ear, nine and one-fourth inches and nine and nine-sixteenth inches. From midway between the eyes at the root of the nose across the center of the fontanelle to the center of the hollow between the cords at the upper part of the neck, twelve inches and twelve and seven-sixteenths inches. Horizontally around the head just over the eyebrows and three-quarters of an inch above the roots of the ears sixteen and one-fourth inches and sixteen and three-fourths inches. The length of the child's body on the first day of the month was twenty-six inches; on the last day, twenty-six and one-half inches.

Attention. One hundred and sixty-second day. While out in the yard with the child, he listens to the song of a bird, turning the head and looking toward the tree, though eight rods away, in which the bird is singing. He delights in a romp and is disappointed if I do not join him. He is an ardent spectator in the children's playing soldier, circus and other games. One hundred and eightieth day. When his brother T., age twenty-six months, is tossing a ball he laughs aloud most heartily, so much so that the older children laugh at his great hilarity. They are anxious to toss the ball to cause him to laugh, but when they do so, he does not laugh.

However, when T. again throws up the ball he laughs as vigorously as ever. Why he laughs when the ball is tossed by T. and not when by the other children is not apparent. It may be on account of the size of T., he being quite small and the ball a large one. Possibly it may be from his love of T. Of late he has taken a great liking to T. who now never, as formerly, slaps and scratches him, but talks to him kindly in his as yet baby language and pets him in his infantile way. One hundred and seventy-third day. He looks into my face so inquiringly and expressively as is seldom done by children several years old. One hundred and eighty-first day. While whistling to him I begin to pat my foot. He becomes curious to know the cause of the sound. Discerning its direction, he leans over my knee, looks down at my foot, infers the cause of the disturbance and is satisfied.

Memory. One hundred and fifty-ninth day. At breakfast, a little oat-meal and milk is given him. At the dinner hour, hearing the dishes rattling in the adjoining room, he begins to fret. Is delighted when brought to the table. Begins coaxing for food by saying, "mu, mu, mu;" refusing to take milk, remembering the food given him in the morning, he is satisfied when he tastes the solid food. One hundred and sixty-third day. Hearing me eating an apple, he turns to me, stretches out his hand and coaxes for the apple and scolds when I do not give it to him. On the same day when up stairs with the mother, through a window he sees me coming up the street some distance away, though crying at the time, he begins to smile on seeing me. One hundred and seventieth day. He becomes impatient to go out when his cap is put on, though he has worn it but three times and has been out of doors but little.

Will. One hundred and fifty-sixth day. He sits alone on my lap. One hundred and eighty-first day. Sits on the floor a short time, without support, holding a ball. For some weeks he has been interested in his feet and for several days has been trying to lift them to his mouth. He succeeds in doing so on the one hundred and seventy-eighth day.

Not only is the right hand stronger and used more frequently than the left, but the fingers of the right hand have more strength, activity, flexibility and aptitude than those of

